

## **REMARKS**

### **I. Introduction**

Claims 14 to 26 are pending in the present application. In view of the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

### **II. Rejection of Claims 14 and 16 to 19 Under 35 U.S.C. § 102(b)**

Claims 14 and 16 to 19 were rejected under 35 U.S.C. § 102(a) as anticipated by U.S. Patent Application Publication No. 2001/0007275 ("Yanagisawa et al."). Yanagisawa et al. do not anticipate these claims for at least the following reasons.

Claim 14 relates to a device for generating chlorine trifluoride and recites a plasma reactor, plasma generating means, a first gas, a second gas selected to react with the first gas to form chlorine trifluoride when under the influence of a high-density plasma, gas supply means via which the first gas and the second gas can be supplied to the plasma reactor, these gases reacting with one another under the influence of the high-density plasma in the plasma reactor, forming chlorine trifluoride, and a gas outlet via which the formed chlorine trifluoride can be removed from the plasma reactor.

The Office Action contends at page 4 that "claim limitations pertaining to a first gas and a second gas selected to react with the first gas to form chlorine trifluoride is an intended use limitation." Applicant respectfully disagrees. Claim 14 recites the first gas and the second gas as elements of the claimed apparatus. In this regard, the phrase "a first gas [and] a second gas selected to react with the first gas to form chlorine trifluoride when under the influence of a high-density plasma" describes **physical properties** of the gases -- i.e., the first gas and the second gas must have chemical structures capable of reacting with each other under the influence of a high-density plasma to form chlorine trifluoride. Applicant respectfully notes that claim 14 claims the gases themselves (having the recited properties) -- not the intended use of those gases.

Yanagisawa et al., relating to a wafer flattening system, disclose gas bombs 31, 32, and 33, containing SF<sub>6</sub>, O<sub>2</sub>, and CF<sub>4</sub>, respectively, which feed gas to an alumina discharge tube. These chemicals are not capable of reacting with each other to form chlorine trifluoride for at least the reason that **none of SF<sub>6</sub>, O<sub>2</sub>, and CF<sub>4</sub>**

**contains chlorine**. In this regard, Yanagisawa et al. do not disclose, or even suggest, employing gases that react with one another under the influence of a high-density plasma to form **chlorine trifluoride**.

Since Yanagisawa et al. do not disclose, or even suggest, all of the features recited in claim 14, it is respectfully submitted that Yanagisawa et al. do not anticipate claim 14.

Claims 16 to 19 depend from claim 14 and therefore include all of the features recited in claim 14. It is therefore respectfully submitted that Yanagisawa et al. do not anticipate these dependent claims for at least the same reasons set forth above in support of the patentability of claim 14.

Withdrawal of this rejection is therefore respectfully requested.

### **III. Rejection of Claims 14 and 15 Under 35 U.S.C. § 102(e)**

Claims 14 and 15 were rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,783,627 ("Mahawili"). Mahawili does not anticipate these claims for at least the following reasons.

The Office Action at page 5 again contends that "claim limitations pertaining to a first gas and a second gas selected to react with the first gas to form chlorine trifluoride is an intended use limitation." As indicated above, the phrase "a first gas [and] a second gas selected to react with the first gas to form chlorine trifluoride when under the influence of a high-density plasma" does not include an intended use limitation.

Mahawili, relating to a reactor for processing a semiconductor substrate, discloses injecting gases into a reactor chamber, in various combinations. However, none of these combinations is capable of forming chlorine trifluoride. In this regard Mahawili does not disclose, or even suggest, employing gases capable of reacting with one another under the influence of a high-density plasma to form **chlorine trifluoride**.

Since Mahawili does not disclose, or even suggest, all of the features cited in claim 14, it is respectfully submitted that Mahawili does not anticipate claim 14.

Claim 15 depends from claim 14 and therefore includes all of the features recited in claim 14. It is therefore respectfully submitted that Mahawili does

not anticipate claim 15 for at least the same reasons set forth above in support of the patentability of claim 14.

#### **IV. Rejection of Claims 20 to 22, 25, and 26 Under 35 U.S.C. § 103(a)**

Claims 20 to 22, 25, and 26 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of U.S. Patent No. 5,756,400 ("Ye et al."), PCT Publication No. WO 00/51938 ("Bhardwaj et al."), and U.S. Patent No. 6,042,654 ("Comita et al."). It is respectfully submitted that the combination of Ye et al., Bhardwaj et al., and Comita et al. does not render unpatentable any of these claims for at least the following reasons.

Claim 20 relates to a method for generating chlorine trifluoride. Claim 20 recites the steps of generating a high-density plasma in a plasma reactor, and supplying to the plasma reactor a first gas and a second gas, which react with one another under the influence of the high-density plasma in the plasma reactor, forming chlorine trifluoride.

Ye et al. relate to a method and apparatus for cleaning by-products from plasma chamber surfaces and disclose generating a plasma of a reactant gas mixture, and contacting contaminants with the plasma in order to remove the contaminants. In this regard, Ye et al. do not disclose, or even suggest, **supplying to a plasma reactor a first gas and a second gas**, which **react with one another** under the influence of the high-density plasma in the plasma reactor to form chlorine trifluoride, or any other etching gas. Moreover, Ye et al. teach supplying chlorine trifluoride as a pre-existing supply gas. See, e.g., col. 6, lines 9 to 16. In view of the foregoing, Ye et al. do not disclose or suggest a **high density plasma method for generating chlorine trifluoride**.

Bhardwaj et al., relating to a chlorotrifluorine gas generator system, disclose a reaction chamber that forms chlorine trifluoride using a **thermal reaction**. In this regard, Bhardwaj et al. do not disclose or suggest a **high density plasma method for generating chlorine trifluoride**.

Comita et al., relating to a method for cleaning a process chamber, disclose providing chlorine gas into a processing chamber, wherein the chlorine gas is thermally decomposed to create chlorine radicals, which react with deposits in a processing chamber. See, e.g., abstract. In this regard, Comita et al. do not

disclose or suggest a **high density plasma generating method for generating chlorine trifluoride**.

As indicated above, the combination of Ye et al., Bhardwaj et al., and Comita et al. does not disclose, or even suggest, all of the features of claim 20. Therefore, Applicants respectfully submit that claim 20 is not rendered unpatentable by the combination of Ye et al., Bhardwaj et al., and Comita et al.

As for claims 21, 22, 25, and 26, which depend from claim 20 and therefore include all of the features recited in claim 20, it is respectfully submitted that the combination of Ye et al., Bhardwaj et al., and Comita et al. does not render unpatentable these dependent claims for at least the same reasons set forth above in support of the patentability of claim 20. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988) (any dependent claim that depends from a non-obvious independent claim is non-obvious).

#### **V. Rejection of Claim 23 Under 35 U.S.C. § 103(a)**

Claim 23 was rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Ye et al., Bhardwaj et al., Comita et al., and U.S. Patent No. 6,136,214 ("Mori et al."). It is respectfully submitted that the combination of Ye et al., Bhardwaj et al., Comita et al., and Mori et al. does not render unpatentable claim 23 for at least the following reasons.

Claim 23 depends from claim 20 and therefore includes all of the features recited in claim 20. As more fully set forth above, the combination of Ye et al., Bhardwaj et al., and Comita et al. does not disclose, or even suggest, all of the features recited in claim 20. Mori et al. are not relied upon for disclosing or suggesting the features of claim 20 not disclosed or suggested by the combination of Ye et al., Bhardwaj et al., and Comita et al. Indeed, Mori et al. do not disclose, or even suggest, the features of claim 20 not disclosed or suggested by the combination of Ye et al., Bhardwaj et al., and Comita et al.

In view of the foregoing, it is respectfully submitted that the combination of Ye et al., Bhardwaj et al., Comita et al., and Mori et al. does not render unpatentable claim 23. Accordingly, withdrawal of the present rejection is respectfully requested.

**VI. Rejection of Claim 24 Under 35 U.S.C. § 103(a)**

Claim 24 was rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Ye et al., Bhardwaj et al., Comita et al., and U.S. Patent No. 6,953,557 ("Ikeda et al."). It is respectfully submitted that the combination of Ye et al., Bhardwaj et al., Comita et al., and Ikeda et al. does not render unpatentable claim 24 for at least the following reasons.

Claim 24 depends from claim 20 and therefore includes all of the features recited in claim 20. As more fully set forth above, the combination of Ye et al., Bhardwaj et al., and Comita et al., does not disclose, or even suggest, all of the features recited in claim 20. Ikeda et al. are not relied upon for disclosing or suggesting the features of claim 20 not disclosed or suggested by the combination of Ye et al., Bhardwaj et al., and Comita et al. Indeed, Ikeda et al. do not disclose, or even suggest, the features of claim 20 not disclosed or suggested by the combination of Ye et al., Bhardwaj et al., and Comita et al.

In view of the foregoing, it is respectfully submitted that the combination of Ye et al., Bhardwaj et al., Comita et al., and Ikeda et al. does not render unpatentable claim 24. Accordingly, withdrawal of the present rejection is respectfully requested.

**VII. Conclusion**

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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